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AMSAT NEWS SERVICE
ANS-084

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

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SB SAT @ AMSAT $ANS-084.01
ANS-084 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 084.01
>From AMSAT HQ KENSINGTON, MD.
March 25, 2018
To All RADIO AMATEURS
BID: $ANS-084.01

AO-92 Operation Schedule

AO-92 operations are scheduled among the U/v FM repeater, L-Band Downshifter, Virginia Tech Camera, and the University of Iowa’s High Energy Radiation CubeSat Instrument (HERCI). Please keep the uplink clear during passes with scheduled mode changes.

For the week of 25-31 Mar 2018, the following mode changes are scheduled:

Approximately 0242UTC 25Mar we will enable the L band uplink for ~24 hours.

Approximately 1645UTC 27Mar we will enable the VT camera and high-speed data for ~40 minutes. Please be ready to copy high-speed data with FoxTelem, and keep the uplink clear at 1645UTC.

All other times the U/v repeater will be open continuously.

The schedule can be viewed anytime at
https://www.amsat.org/satellite-schedules/

[ANS thanks Drew KO4MA for the above information]

EQUiSat to launch into space May 9

NASA-funded student group constructs satellite, hopes to inspire interest in space among youth.

Since its conception nearly seven years ago, a continuously revolving group of University undergraduates has been diligently working to send a satellite into space. Now, as May 9 draws closer, the group of over 200 past and current students and faculty can find catharsis as the EQUiSat will finally launch into orbit.

The project, funded by NASA's CubeSat Launch Initiative, will send a small cube satellite to the International Space Station to then launch into orbit. The EQUiSat will test lithium iron phosphate batteries, which are used in machines such as lawn mowers, but find limited applications in spacecrafts. Due to its low cost and the fact that its latitude will coincide with that of Providence, which allows its LED flashes to be seen from the ground, the satellite will also serve as a symbol for the accessibility of space.

"A big part of the goal is proving the accessibility of space. … We kind of want to show people that space is right there," said Hunter Ray '18, the project's co-leader and team manager. The project could have cost upwards of tens of thousands of dollars, but the team has kept its cost to just $3,776.61, Ray added. The project's relatively low cost and mantra to "build it from the ground up" speak to the feasibility and accessibility of space.

The EQUiSat will be equipped with powerful LED lights, a small radio and multiple sensors to keep track of its trajectory and control steering. "Anyone with a hand radio can pick up its frequency. … We will be relying on the community of amateur radio (groups) around the world to help collect EQUiSat's data," Ray said. He described the construction process as his favorite part of the project. "It's like a Lego set. You build it and you're like 'great, now what do I do,' … but the mission will keep going."

Ray has been a part of the project since he arrived on campus. "I started freshman year, first week … (I decided that) I want to build a spacecraft," he said. "I ended up taking over for the power system development, … (and then) I was elected as part of the project's manager and co-leader of the team," he added. He hopes to see similar projections come together in the future following the EQUiSat's launch. "The fact that as undergraduates we have been able to build an entire spacecraft from scratch … (it shows where) we are going with the space program, as humanity is progressing into the final frontier," he said. Ray will be delivering the EQUiSat to Houston this week in order to facilitate preparations for the launch.

Anand Lalwani '18 leads the power team, the group of 17 team members in charge of the EQUiSat's solar power and battery construction. "We are a group of incredibly motivated, but incredibly fun people. Yes,

we have had our arguments and fights, but we still work very well with each other," he said. The power team not only constructed solar panels from scratch, but also ensured that they would survive a launch. Eventually finding a coating and the means to apply it to protect the delicate panels was a grueling process, Lalwani said. "We tried (different protocols) for about 12 months, … and we failed consistently," he said. Finding a solution "was probably (Brown Space Engineering's) biggest achievement," as no other satellite group in the country had done this, he said.

The project also serves as an outreach symbol, Lalwani said. By talking to both middle school and high school students and teaching them about different aspects of engineering, the team hopes to show children that space is not as far-fetched as it may seem. "What we had pitched to NASA in our original mission was that 'We are going to make space cool again,'" Lalwani said. He hopes to see BSE continue its work with new satellites being constructed in under two years.

"For BSE, our future is very bright. … All our future applications for launches such as this will be very likely granted. … We expect all the sophomores in our team to have a satellite they would have designed and built and launched before they graduate from Brown," he added.

Max Monn GS, one of founders of the initial project, worked on the project from its initial creation in 2011 to 2013. "Since the manned space missions to the moon … (the public) had a declining interest for space" due to the lack of human connection, Monn said. The origin for the project began as a means for creating an idea in Adjunct Associate Professor of Engineering Rick Fleeter's class, which has since evolved into ENGN1760: "Design of Space Systems," Monn described. While other projects leaned toward theoretical concepts or plans such as the colonization of Mars, Monn and the other founders decided to plan something which was "down to Earth" and did not need a large corporation to complete, Monn said.

The EQUiSat's LED lights flashing down toward Earth show the accessibility of space, one of the project's main purposes. This element was inspired by Monn's interest in photography. Following the initial work, the project expanded from a four-person class project to a student group. "We weren't really sure how it would be received," he said. At the first information session, 15 to 20 people showed up. Seeing the growth of the group has been one of Monn's favorite memories of the project. "It feels like a legacy," he said.

Serving as founder, member and mentor, Monn has seen the project evolve from "wires spread out on a table" to its eventual launch. "We had these visions of what it could be and to have left the project in such shambles … (and) having it become more and more real… (it's) a pleasant surprise," he said.

"You don't need to be a multi-millionaire, you do not have to be a rocket scientist, and space is not that far," Lalwani said. The satellite will serve as a realization that the final frontier is truly not as far as it seems, he added. "EQUiSat is reaching down to everyone on the Earth and showing them that space is right there, and I hope that, in a sense, it helps unite everyone together," Ray said.

[ANS thanks Chris Schutte and The Brown Daily Herald for the above information]

Pearl Technology STEM Camp, June 18-22, 2018 in Illinois

The STEM Academy is sponsored and put on by Pearl Technology, with the assistance of the University of Illinois Extension, Richwoods Township, Goodwill Industries of Central Illinois, Peoria Area Amateur Radio Club, Peoria Heights High School, volunteer Caterpillar engineers, and ISS Above Software.

Twenty-five middle school students will spend June 18-22 attending the STEM Academy held at Goodwill Commons, where they will learn about space and radio communications. The students will build Raspberry Pi computers that stream live video from the ISS. Students will also participate in a high-altitude balloon launch by building the payload with student experiments and then, use radio telemetry to track the balloon to near-space.

The highlight of the academy will be when students communicate directly with astronauts on the International Space Station. The ISS contact will be open to students of all ages in the local area.

[ANS thanks Fritz Bock, WD9FMB for the above information]

Software-Defined Radio Using MATLAB & Simulink and the RTL-SDR

Learn how to receive and analyze wireless signals using RTL-SDR, MATLAB, and Simulink. RTL-SDR is a popular, low-cost hardware that can receive wireless signals. The RTL-SDR dongle features the Realtek RTL2832U chip, which can be used to acquire and sample RF signals transmitted in the frequency range 25MHz to 1.75GHz.

A FREE ebook that teaches users how to receive and analyze wireless radio signals using MATLAB, Simulink, and RTL-SDR
Key features of this free ebook include:

+ Illustrating how to receive wireless RF signals using RTL-SDR and analyze the signals in time and frequency domains

+ Showing how to use RTL-SDR in conjunction with SDR transmitters to develop a complete communication system

+ Providing an extensive set of DSP-enabled SDR examples to help you get started

Find out more or download from:
https://tinyurl.com/ANS084-Mathwoks

This news provided by http://www.nooelec.com/store/

[ANS thanks NooElec.com and mathworks.com for the above information]

AMSAT-LU Balloon Flight Carries RepSat-1 Cubesat Transponder

AMSAT-LU reports they flew RepSat-1, a repeater designed for

cubesat operation, aboard a balloon launched from Victorica, La Pampa, Argentina on March 24. The uplink was on 435.950 MHz with a downlink on 145.950 MHz.

RepSat-1 is an 8 cm square board capable of being integrated into a cubesat. The FM module transmits at 1 watt. It is also capable of transmitting voice, SSTV in Robot 36, telemetry and APRS location data identifying as LU7AA-11.

Telemetry and location were transmitted every 90 seconds via 1200 baud AX.25 APRS data.

A separate module on the flight transmitted tracker data for balloon recovery on 145.930 MHz with the LU7AA-12 callsign. It included a camera capable of filming with a 360 degree view.

The AMSAT Argentina web aite can be found at: http://www.amsat.org.ar

[ANS thanks AMSAT-LU for the above information]

AMSAT Rover Awards Issued

On January 1, 2018, Bruce Paige, KK5DO, AMSAT Director Contests and Awards announced the Rover Award. This award is granted to stations who achieve a combined 25 points using any combination of the defined criteria posted at: https://www.amsat.org/amsat-rover-award/

Points can be earned for each grid square activated outside of your home grid square using the FM, linear, and digital satellites. While FM contacts count for 1 point each multiplier points are available for contacts via the linear and digital satellites.

Additional points are available for photographs, publicity, social media promotion, and AMSAT Journal articles. The options are numerous so please refer to the Rover Award Website for all of the details.

To date, 16 rovers have earned the award:

Rover	Call	Date Issued
001	AC0RA	02 Jan 2018
002	WD9EWK	05 Jan 2018
003	NJ4Y	08 Jan 2018
004	M0IDA	09 Jan 2018
005	KG5GJT	12 Jan 2018
006	EB1AO	18 Jan 2018
007	N7AGF	22 Jan 2018
008	N4YHC	29 Jan 2018
009	W0S	07 Feb 2018
010	KE0PBR	08 Feb 2018
011	K5IX	18 Feb 2018
012	AK4WQ	23 Feb 2018
013	WI7P	25 Feb 2018
014	K5ND	09 Mar 2018
015	N6UA	12 Mar 2018
016	N9IP	16 Mar 2018

[ANS thanks AMSAT Director Contests and Awards, Bruce Paige, KK5DO,

for the above information]

New HackSpace Magazine Available For Download

Issue 5 of the free magazine HackSpace has an article about Limor Fried AC2SN (aka LadyAda) of electronics company Ada Fruit as well as a Dr Lucy Rogers M6CME article "Share the knowledge"

Also in this issue
- Tutorial Slack-powered On-Air sign
- Direct from Shenzhen: Stirling engine buggy
- Can I Hack It? Every home needs a hacked wireless doorbell
- Raspberry Pi 3B+

Download the free PDF of issue 5 April 2018 from https://hackspace.raspberrypi.org/issues

[ANS thanks Southgate ARN for the above information]

Introducing CATSync - The new CAT tool for WebSDRs

Oscar, DJ0MY, has developed a new software tool for radio amateurs and SWLs.

CATSync allows the user to control public WebSDR receivers with a real rig connected via CAT. It supports the classical Web-SDR servers as well as the newer Kiwi SDR servers publically available on the internet.

This gives you access to dozens of web based receivers with the comfort of tuning your rig at home. This software helps you to bring you back into the fun of ham radio when you are suffering from local temporary or permanent high noise levels in an urban QTH location.

The software has the following features:
- Syncronizes any public WebSDR server with your real RIG…
- Supports a wide number of RIG's (it uses the popular OmniRig engine)
- Supports WebSDR and KiwiSDR browser based SDR receivers
- Tune the VFO of your radio and see the web SDR follow in realtime!
- Switch modes (SSB, CW, etc.) on your radio and see the web SDR switch mode in realtime.
- Listen to the same frequency as your rig via web SDR
- Ideally suited e.g. for people suffering from local QRM
- Can track RX or TX VFO (e.g. to find that split of a DX station) if radio CAT supports both simultanously
- Can be interfaced with popular logging software using OminRig or via VSPE port splitter

For more information visit the author's website: https://catsyncsdr.wordpress.com/

See a YouTube video of CATSync under: https://www.youtube.com/watch?v=UbSHfkjhx0c

[ANS thanks Southgate ARN for the above information]

ARISS News

The following contacts were successful since February 18, 2018:

On The Gagarin from Space, "Galaxy - Children and Youth Center for Space Education", Kaluga, Russia, direct via RK3X with Alexander Misurkin on 2018-02-18 10:45 UTC

Agrupamento de Escolas do Fundão, Fundão, Portugal, direct via CS5DBB with Scott Tingle KG5NZA on 2018-02-21 09:38 UTC

Museum of Science & Technology - Danforth Middle School, Syracuse, NY, direct via K2MST with Mark Vande Hei KG5GNP on 2018-02-24 08:45 UTC

On The Gagarin from Space Federal State Budgetary Educational Institution of Higher Education "Southwest State University", Kursk, Russia, direct via RV3DR on 2018-02-26 17:59 UTC

Parkside Middle School, San Bruno, CA, direct via K6PVJ Scott Tingle KG5NZA 2018-03-07 18:05 UTC

Gymnasium Räddningsgymnasiet Sando, Sandöverken, Sweden, telebridge via K6DUE with Scott Tingle KG5NZA on 2018-03-15 11:12 UTC

Templestowe Valley Primary School, Templestowe, Victoria, Australia, telebridge via VK4KHZ with Scott Tingle KG5NZA on 2018-03-19 08:43 UTC

Upcoming ARISS Contact Schedule

Quick list of scheduled contacts and events:

Templestowe Valley Primary School, Templestowe, Victoria, Australia, telebridge via VK4KHZ
The ISS callsign is presently scheduled to be NA1SS
The scheduled astronaut is Scott Tingle KG5NZA
Contact was successful: Mon 2018-03-19 08:43:46 UTC
Watch for live stream on the EchoLink AMSAT conference server live.

Freeport Public Schools, Freeport, NY, telebridge via IK1SLD
The ISS callsign is presently scheduled to be OR4ISS
The scheduled astronaut is Scott Tingle KG5NZA
Contact is a go for: Tue 2018-03-27 17:41:04 UTC

[ANS thanks ARISS, Charlie AJ9N and David AA4KN for the above information]

Satellite Shorts From All Over

+ AO-91 Distance Record

  The footprint on AO-91 has been stretched yet again to 6,123 km with a QSO between @eb1ao and PU8MRS on 17-Mar-2018 at 14:51 UTC. https://www.amsat.org/satellite-distance-records/ .

+ PicSat Goes Silent

  PicSat @IamPicSat Tweeted:
  I am feeling somewhat confused up here. My communication has
  fallen silent (sorry faithful listeners, I did not see that
  coming. My team is trying to find out what happened. More to
  follow, when I pass over Paris @amsatf #amsat @AmsatUK
  @amsat_sm @SatNOGS

  PicSat @IamPicSat Tweeted:
  Passed over Paris, couldn't not talk. Don't know why, neither
  does my team. They tried! Fortunately, I have a so-called
  watch-dog onboard, a piece of hardware that will kickstart me
  if I have not received anything from nobody for 72h

  PicSat team tweeted Friday morning: Nothing, nix. I still cannot
  communicate. Hard for me to tell if my Watch Dog initiated the kick
  start. If it did, and it did not work for some reason, it will try
  again in 72h from now. In the mean time, pls stay tuned!

  Monday March 26 will be the next time the 72 hour watchdog fires.

  Now we wait: pic.twitter.com/OBdsOLiK67

/EX

In addition to regular membership, AMSAT offers membership in the
President's Club. Members of the President's Club, as sustaining
donors to AMSAT Project Funds, will be eligible to receive addi-
tional benefits. Application forms are available from the AMSAT
Office.

Primary and secondary school students are eligible for membership
at one-half the standard yearly rate. Post-secondary school students
enrolled in at least half time status shall be eligible for the stu-
dent rate for a maximum of 6 post-secondary years in this status.
Contact Martha at the AMSAT Office for additional student membership
information.

73,
This week's ANS Editor,
EMike McCardel, AA8EM
aa8em at amsat dot org